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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,312	09/30/2003	Vivek Jain	JP920030093US1	9424
T. Rao Coca IBM Corporation Almaden Research Center 650 Harry Road San Jose, CA 95120			EXAMINER AHMED, AFFAF	
			ART UNIT 3609	PAPER NUMBER
			MAIL DATE 07/11/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,312	JAIN ET AL.	
	Examiner	Art Unit	
	Affaf Ahmed	3609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/30/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Status of Claims

1. This action is in reply to the Application filed on 09/30/2003.
2. Claims 1-28 were canceled on 09/30/2003 and claims 29-56 were amended on 09/30/2003.
3. Claims 29-56 are currently pending and have been examined.

Information Disclosure Statement

4. The Information Disclosure Statement filed on 09/30/2003 has been considered. An initialed copy of the Form 1449 is enclosed herewith.

Drawings

5. The drawings are objected to under 37 CFR 1.83(a) because:
 - They fail to show item 214 and 210 as described in the specification.
 - Item 302 (fig 3) does not disclose the option of "customer being selected from a library of shopper profile" in the specification.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Correction is required.

Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended

drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because item 214 (fig 2) referred to "Reinforcement learning in constrained domain tool", and item 210 (fig2) refereed to "Merchant objective specification tool", while the drawing shows item 214 refereed to "Merchant objective specification tool" and item 210 referred to "Reinforcement learning in constrained domain tool". Appropriate correction is required.
7. The disclosure is objected to because item 302 (fig 3) is not specified in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 44 recites the limitation of "*a first sub-unit operable for determining sequences in which selected initiatives can be deployed, if more than one initiative is selected.*" It has been held that actions that may or may not be done is indefinite and does not distinguish the claim from the prior art. (In re Collier, 158 USPQ 266 (CCPA 1968)).
9. Claim 50 recites the limitation of "determining sequences in which selected initiatives can be deployed, if more than one initiative is selected". It has been held that actions that may or may not be done is indefinite and does not distinguish the claim from the prior art. (In re Collier, 158 USPQ 266 (CCPA 1968)).

Claim Rejections-35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 29, 30-34,37-38,40,43-45,47-49,50-51,54-56 are rejected under 35 U.S.C. 102 (e) as being anticipated by Honarvar et al., US 6,321,206 B2.

Examiner's Note: The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual

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claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Claims 29 43, and 49:

With regard to the limitations of:

- *Generating a plurality of marketing strategies;*
- *Determining an optimal marketing strategy based on a state of a customer and constraints corresponding to marketing channels;*
- *Deploying the determined optimal marketing strategy;*
- *Recording customer response to the deployed optimal marketing strategy;*
- *Updating information corresponding to the state of a customer based on the recorded customer response;*
- *Repeating steps b to e for the specified time period.*

Honarvar teaches a system that applies different marketing strategies to different customers with an input unit and data processing unit to evaluate data for optimizing strategies options that will best satisfies the customer outcomes. See at least column 6, lines 34-62. The software-based system further determines an appropriate action that has a specific collection procedure or a specific marketing action. See at least column 2, lines 63-67 Further more, Honvarvar also teaches step of collecting data and periodically aggregated and grouped into different categories where an observation point is taken. See at least column 11, lines 49-54.

Claims 30, 44 and 50;

With regard to the limitations of:

- *Selecting at least one initiative that enables an addressing of the specified objective.*

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- *Determining sequences in which selected initiatives can be deployed, if more than one initiative is selected.*
- *Combining the selected initiatives in the determined sequences to obtain the plurality of marketing strategies.*

See at least column 3, lines 11-31 and column 5, lines 14 – 25 and figure 7.

Claims 31 and 32;

With regard to the limitations of:

- *Varying parameters of initiatives to generate new initiatives.* Honarvar teaches a system that assigns clients to groups based on characteristics, where subsequently these groups will be separated based on different rules. See at least column 3, lines 20-32 and column 10, lines 13-20.
- *Varying deployment time of initiatives.* Honarvar teaches an event that automatically generated due to client behavior or systematically produced at specified time intervals. See at least column 3, lines 11-20 and fig 11.

Claims 33, 38, 45, 51 and 56:

With regard to the limitations of:

- *Determining all possible states of customers.* See at least column 3, lines 21-24.
- *Determining an optimal policy for each state based on past data.* See at least column 3, lines 25-28. The above limitation is implicitly describing that based on consumer history or past data; consumers are being categorized into segments where the best policy will be applied.
- *Identifying the state of a customer, the customer visiting a merchant or the customer being selected from a database of customer.* See at least column 3, lines 32-34. The above limitation implicitly consumers are randomly chosen from a database.
- *Identifying the optimal policy for an identified customer state.* See at least column 3, lines 39-43.

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- *Modeling customer's preferences for marketing channels, cost and effectiveness of different marketing channels, and the specified budget as effective constraints.* Honvarvar teaches in at least fig 7, customer's preference of marketing channels; Honvarvar also teaches a decision management system that will increase cost- effectiveness of marketing strategies; see at least column 3, lines 4-6. Honvarvar does not specifically specify budget as effective constraint, however the above limitation is inherently implemented in decision management system where marketing strategy and advertising mechanisms are implemented.
- *Determining an optimal feasible policy based on effective constraints corresponding to marketing channels; and determining the optimal marketing strategy from the optimal feasible policy.* Honarvar in at least fig 7 and associated text teaches a method of comparison between two marketing strategies and based on the outcome result the optimal marketing channel is implemented.

Claim 34:

With regard to the limitations of:

- *Identifying all relevant attributes of customers.* See at least column 7, lines 65- 67 and column 8, line 1.
- *Partitioning the customers into partitions based on identified attributes using a similarity measure based on a historic policy, actual rewards and transition probabilities from one data point to another, the partitions forming new states of the customers.* See at least column 5, lines 15-25 and column 10, lines 29-39.

Claim 37, 47 and 53:

With regard to the limitations of:

- *Selecting the marketing strategy, which maximizes a value for the state over all marketing strategies for a given state; and repeating said step of selecting for each state.* See at least column 9, lines 9-40 and fig 7, and fig 11 as well as associated text.

Claims 40, 48 and 54:

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With regard to the limitations of:

- *Identifying a resulting state of the customer.* See at least column 13, lines 52-55.
- *Updating values of the state of the customer.* See at least column 13, lines 61-64.
- *Updating an optimal policy.* See at least column 14, lines 54-67. Honarvar implicitly teaches the above three limitation by grouping customers into different categories, where by measuring the performance of each report group across test group Honarvar update the state of the consumers and moving them into a new category where a new hybrid strategy is applied to determine the best performing path decision of each test group.

Claim 55:

With regard to the limitations of:

- *A database storing information regarding initiatives that can be offered to customer.* See at least column 15, lines 47-49.
- *Marketing channels available for executing the initiatives.* See at least fig 7 and associated text.
- *Cost and effectiveness of the marketing channels* Honarvar implicitly teaches the above limitation when implemented the comparison of targeting consumers either by placing calls or sending an offer. See at least fig 7 and associated text.
- *States of customers.* See at least column 9, lines 34-42.
- *Enabling a merchant to specify at least one objective for a specified time period.* See at least column 12, lines 51-56.
- *Generating a plurality of marketing strategies based on the objective specified by the merchant, the marketing strategies being a combination of initiatives; and a component operable for determining the optimal marketing strategy and at least one marketing channel based on a state of a customer and cost and effectiveness of marketing channels.* See at least the abstract. Honarvar implicitly teaches the above limitation when implemented the comparison of targeting consumers either by placing calls or sending an offer. See at least fig 7 and associated text. Further more, the limitation above of determining consumer

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state and cost effectiveness are inherently done in decision marketing analysis to enhance consumer relationship and implementing the optimal solution with the least amount of effort, cost and risk.

Claim 56:

With regard to the limitations of:

- *Generating a plurality of marketing strategies.* See at least column 6, lines 36-37.
- *Determining all possible states of customers.* See at least column 3, lines 21-24.
- *Determining an optimal policy for each state based on past data.* See at least column 3, lines 25-28. The above limitation is implicitly describing that based on consumer history or past data; consumers are being categorized into segments where the best policy will be applied.
- *Identifying the state of a customer, the customer visiting a merchant or the customer being selected from a database of customers.* See at least column 3, lines 32-34. The above limitation implicitly consumers are randomly chosen from a database.
- *Identifying the optimal policy for an identified customer state.* See at least column 3, lines 39-43.
- *Modeling customer's preferences for marketing channels, cost and effectiveness of different marketing channels, and the specified budget as effective constraints.* Honvarvar teaches in at least fig 7, customer's preference of marketing channels. Honvarvar also teaches a decision management system that will increase cost- effectiveness of marketing strategies. See at least column 3, lines 4-6. Honvarvar does not specifically specify budget as effective constraint, however the above limitation is inherently implemented in decision management system where marketing strategy and advertising mechanisms are implemented
- *Determining an optimal feasible policy based on the identified optimal policy and effective constraints corresponding to marketing channels.*
- *Determining an optimal marketing strategy from the optimal feasible policy.*
Honarvar in at least fig 7 and associated text teaches a method of comparison between two marketing strategies and based on the outcome result the optimal marketing channel is implemented.
- *Deploying the determined optimal marketing strategy.*

- *Recording customer response to the deployed marketing strategy.*
- *Identifying a resulting state of the customer.*
- *Updating values of the state of the customer.*
- *Updating the optimal policy.*
- *Repeating steps c to m for the specified time period.*

Honvarvar teaches a system that applies different marketing strategies to different customers with an input unit and data processing unit to evaluate data for optimizing strategies options that will best satisfies the customer outcomes. See at least column 6, lines 34-62. The software-based system further determines an appropriate action that has a specific collection procedure or a specific marketing action. See at least column 2, lines 63-67 Further more, Honvarvar also teaches step of collecting data and periodically aggregated and grouped into different categories where an observation point is taken. See at least column 11, lines 49-54.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 35,36,39,40-42, 46 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honarvar et al, US Pat. No. 6,321,206 B1 in view of Ulwick et al, US. Pat. No. 6,115,691.

Claim 36, 40 and 41:

Honarvar does teach the limitation of:

- *Computing transition probabilities from a given state to another state for the policy.* See at least column 6, lines 52-67 and column 9, lines 1-4. Honarvar does not specifically teach the limitations of:
- *Computing value of expected immediate reward for the policy in the state.*
- *Computing discounted expected value of a resulting state for the policy.*
- *Computing a sum of expected immediate reward and the discounted expected value.*
- *Computing a sum of a new immediate reward.*
- *A discounted value corresponding to the resulting stat.*
- *Reduced by a value corresponding to an initial state of the customer.*
- *Updating the values corresponding to the initial state of the customer by adding a fraction of the computed sum to a value of a previous state of the customer.*

Ulwick however, in at least column 9, lines 2-4 and column 7, lines 46-50 teaches a computer software based process program that is capable of predicting metrics for measuring parameter of desired outcomes; computing and solving matrix analysis to determine the best feasible solution for certain data. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to compute discount and sum of rewards to maintain consumers loyalty.

- *Propagating a change in the value of the state to all other states.* Ulwick teaches in at least column 6, lines 53-67 and column 9, lines 5- 17 that based on parameters and effectiveness of predictive metrics of each assigned value and weight will determine consumer satisfaction with overall outcome result. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to obtain an optimum solution over time.

Claims 35,46 and 52:

Honarvar does not specifically teach the following limitations.

- *Identifying a deterministic policy.* Ulwick teaches the parameters of each mission of the software are identified in advance. See at least column 6, lines 6-13. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to obtain and implement the best strategy to maintain consumers loyalty.
- *Initializing a value of all possible states for the policy.* Ulwick teaches initialization of data is done in advance and loaded and stored into the computer. See at least column 6, lines 17-21. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization so no corrupted data is produced.
- *Computing the value of a state for the policy.* Ulwick teaches a computer based system and software package that computes predictive metrics on each desired outcome based on assigned values and weights. See at least column 6, lines 53- 67 and fig 15 with associated texts. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to obtain the most effective and efficient result of the strategy.
- *Repeating said step of computing for all possible states.* Ulwick teaches contemplate establishment of a finite set of predictive metrics. See at least column 16, lines 17-30. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to insure validity of the outcome results.
- *Constructing a new improved policy.* Ulwick teaches computing of data will describe the entire outcome that an optimal solution will achieve. See at least column 6, lines 23-36. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to obtain the most effective result of the strategy.

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- *Iteratively performing steps of computing, repeating, and constructing until the new improved policy remains unchanged for two subsequent iterations.* Ulwick teaches contemplate establishment of a finite set of predictive metrics. See at least column 21, lines 48-56 and column 16, lines 41-46. It would have been obvious to insure the suitability and the technique that implement is beneficial and will produce an efficient outcome results.
- *Selecting the policy with maximum value for the state as the optimal policy for the given state.* Ulwick teaches result of computed data displayed in prioritizing of importance with maximum and minimum value of each predictive metric set. See at least column 16, lines 40-53, and fig 19-a with the associated texts. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization To obtain the most desired solution of the outcome.

Claim 39:

With regard to the limitations of:

- *Determining an optimal feasible policy based on effective constraints corresponding to marketing channels comprises,* Honarvar in at least fig 7 and associated text teaches a method of comparison between two marketing strategies and based on the outcome result the optimal marketing channel is implemented. Honarvar does not specifically teach the limitation of:
- *Mapping the optimal policy uniquely to a closest feasible optimal policy based on the effective constraints, if the effective constraints are not satisfied by the optimal policy.* Ulwick however teaches in at least fig 18 c and associated text where the closest estimation of the feasibility region is implemented. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Honarvar's creating strategies techniques with Ulwick's strategies evaluation and optimization to create the optimal solution that will deliver the most value given effort, risk and cost that consumer is willing to expend.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Affaf Ahmed whose telephone number is 571-270-1835. The examiner can normally be reached on Monday- Friday 7:30 AM- 5:00 PM EST, ALT Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Reagan can be reached on. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Name : Affaf Ahmed
Title : Patent Examiner
Date : 7/9/2007
Signature:

JAMES REAGAN
SUPERVISORY PATENT EXAMINER

